

Warmup!

1. Find the inverse

$f(x) = 4x - 8$

$f^{-1}(x) = \frac{1}{4}x + 2$

2. Find the inverse.

$\{(3,2) (5, -8)\}$

$\{(2,3) (-8,5)\}$

## 7.9 Square Root Functions and Inequalities

Square root function--a function that contains a square root of a variable

What is the inverse of

$f(x) = x^2$  ?

$x = y^2$

$\pm\sqrt{x} = y$

$y = \sqrt{x}$  is a fn.

Graph in the real number system.

$y = \sqrt{2x + 3}$

$2x + 3 \geq 0$

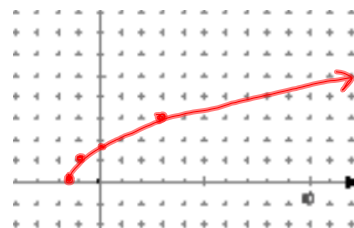
$x \geq -\frac{3}{2}$

$\begin{array}{r|l} x & y \\ -\frac{3}{2} & 0 \\ -1 & 1 \\ 3 & 3 \end{array}$

$\begin{array}{r|l} x & y \\ 0 & \sqrt{3} \end{array}$

$D: x \geq -\frac{3}{2} \quad [-\frac{3}{2}, +\infty)$

$R: [0, +\infty)$



$y = \sqrt{\frac{3}{2}x - 1}$

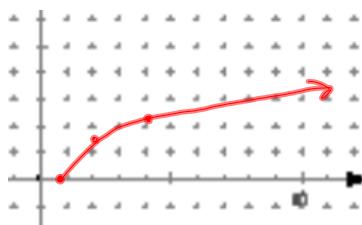
$\frac{3}{2}x - 1 \geq 0$

$x \geq \frac{2}{3}$

$\begin{array}{r|l} x & y \\ \frac{2}{3} & 0 \\ 2 & \sqrt{2} \\ 4 & \sqrt{5} \end{array}$

$D: [\frac{2}{3}, +\infty)$

$R: [0, +\infty)$



$y = -\sqrt{2x} + 1$

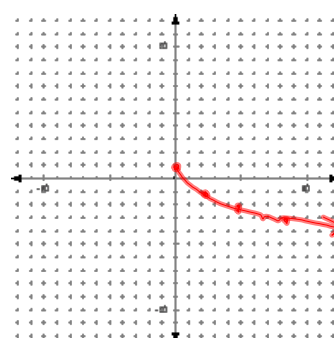
$2x \geq 0$

$x \geq 0$

$\begin{array}{r|l} x & y \\ 0 & 1 \\ 2 & -1 \\ 4.5 & -2 \\ 8 & -3 \end{array}$

$D: [0, +\infty)$

$R: (-\infty, 1]$



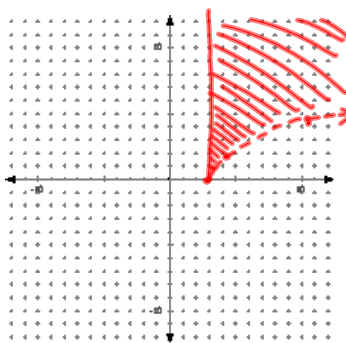
## Inequalities

$$y > \sqrt{3x - 8}$$

$$3x - 8 \geq 0$$

$$x \geq \frac{8}{3}$$

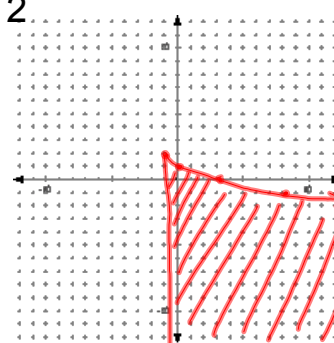
$2\frac{2}{3}$	$\frac{8}{3}$	0
3	1	
4	2	
10	$\sqrt{22}$	



$$y \leq -\sqrt{x+1} + 2$$

$$x \geq -1$$

x	y
-1	2
0	1
8	-1



HW

p398

15-31 odd